

The present invention is a gas component sensor comprising novel electrolyte compositions. The electrolyte compositions in bulk, sintered or thin film embodiments are capable of forming with different-metal sensing and reference electrodes a highly stable gas oxide sensors. The novel electrolyte composition changes electrochemical reactions at the sensing and reference electrodes and the overall reaction of the electrodes and electrolyte. The novel electrolyte compositions have: (1) excellent chemical stability and thermal compatibility as to the electrodes and a preferred ceramic substrate, (2) excellent chemical stability with the environment as to the reference and sensing electrodes, which need not be sealed against the atmosphere to be sensed, (3) effective adherence to the substrate and electrode metals.